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Jack B. Dennis

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08/14/2008

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WASHINGTON, DC 20005

EXAMINER

DANG, KHANH

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

1 RECORD OF ORAL HEARING  
2  
3 UNITED STATES PATENT AND TRADEMARK OFFICE  
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5  
6 BEFORE THE BOARD OF PATENT APPEALS  
7 AND INTERFERENCES  
8

9  
10 Ex parte JACK B. DENNIS and SAM B. SANDBOTE  
11

12  
13 Appeal 2007-4334  
14 Application 09/715,772  
15 Technology Center 2100  
16

17  
18 Oral Hearing Held: July 9, 2008  
19

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21  
22 Before JAMES D. THOMAS, ST. JOHN COURTENAY III, and THU  
23 ANN DANG, Administrative Patent Judges.  
24

25 ON BEHALF OF THE APPELLANTS:  
26

27 EDWARD J. KESSLER, ESQUIRE  
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31

32 The above-entitled matter came on for hearing on Wednesday, July 9,  
33 2008, commencing at 9:00 a.m., at The U.S. Patent and Trademark Office,  
34 600 Dulany Street, Alexandria, Virginia before Dominico Quattrociocchi,  
35 Notary Public.  
36  
37

1 MS. HALL: No. 19, appeal no. 2007-4334, and the attorney's Mr.  
2 Edward Kessler.

3 JUDGE THOMAS: Thank you. Good morning, sir.

4 MR. KESSLER: Good morning.

5 JUDGE THOMAS: I surmise you've been here before.

6 MR. KESSLER: Pardon?

7 JUDGE THOMAS: I surmise that you have been here before?

8 MR. KESSLER: Not in this room.

9 JUDGE THOMAS: Well, at the Board. I don't mean our unit case,  
10 that's --

11 MR. KESSLER: Yes.

12 JUDGE THOMAS: -- okay. So you can proceed at any time. You  
13 can use that clock as a guide for your time limit.

14 MR. KESSLER: And how much time will I get?

15 JUDGE THOMAS: Twenty minutes.

16 MR. KESSLER: Twenty minutes? Fine. I probably won't need that  
17 much time. What I would like to do is --

18 JUDGE COURTENAY: You get extra time if we ask you questions,  
19 so --

20 MR. KESSLER: Thank you.

21 JUDGE COURTENAY: -- you may get more than 20 minutes.

22 MR. KESSLER: I would like to hand the Board some exhibits. I  
23 would hope the Examiner has seen these, because Figure 1 is taken from the  
24 reference, the Motomura reference, and Figure 4 is taken from our  
25 application. So there's nothing new. I think I gave you one extra copy of  
26 Figure 1.

1 JUDGE COURTENAY: Right.

2 MR. KESSLER: Yeah. Thank you. I think this will just make it a  
3 little bit easier to show what the differences are. Would you like me to first  
4 explain what the invention is, or should I just go right into the differences?

5 JUDGE COURTENAY: If you could do that briefly, that would be  
6 constructive, I think. Just for the record, you've given us a copy of Figure 1,  
7 of the Motomura reference?

8 MR. KESSLER: Motomura reference. And Figure 4 from our  
9 pending application.

10 JUDGE COURTENAY: Okay.

11 MR. KESSLER: Okay? If you look at Figure 4, what we -- what our  
12 invention is, is a, it's a processing slice, it's a device -- it's a system where we  
13 have a processing slice, which is the entire system shown in Figure 4. It's  
14 reference no. 310. That goes out to a peripheral BUS, which is -- you're  
15 going to see a peripheral message 340 on the lower right-hand side. And  
16 what we are able to do is we are able to execute a plurality of threads  
17 concurrently during a single clock cycle. So we can send one instruction out  
18 to the peripheral unit and another instruction out to the other functional units  
19 at the same time, in the same clock cycle. And --

20 JUDGE COURTENAY: Could I ask you a question --

21 MR. KESSLER: Yes.

22 JUDGE COURTENAY: -- regarding this concurrent execution. I am  
23 looking now at page 8 of your specification. And you described the  
24 processing slices 310 sub 1 through 310 sub 4 as containing a program  
25 sequencer and execution units in the plural to perform instruction fetch,

1 decode, dispatch and execution for four threads -- so, clearly, we have a  
2 plurality of threads.

3 MR. KESSLER: Yes.

4 JUDGE COURTENAY: Your specification describes that each of the  
5 processing slices operates by interleaving the execution of instructions from  
6 the four threads. Can you expand upon that interleaving? I think the  
7 Examiner has focused on that term. Your processing slice as disclosed is  
8 capable of concurrent operation of a plurality of threads, is that correct?

9 MR. KESSLER: Correct.

10 JUDGE COURTENAY: Okay, they're not interleaved sequentially?

11 MR. KESSLER: I don't believe so, no, as far as I know.

12 JUDGE COURTENAY: To the best of your knowledge?

13 MR. KESSLER: Yeah.

14 JUDGE COURTENAY: Okay.

15 MR. KESSLER: Okay?

16 JUDGE COURTENAY: Continue.

17 MR. KESSLER: What the Examiner has said is that Motomura -- and  
18 it's not clear exactly how the Examiner is relying on Motomura, because if  
19 we look at Figure 1 of Motomura, his processing slice is either the entire  
20 Unit 100, everything enclosed in the box, in which case, there are no  
21 functional units, or it is a single one of the Processor 110, in which case,  
22 when you send instructions through that processor, you must have a wait  
23 state before you set up -- send other instructions. And he says that --

24 JUDGE COURTENAY: So it appears you're left guessing, you're  
25 speculating on how the Examiner has read the claim on the reference. There

1 are two alternate ways. The first way being that your processing slice is  
2 corresponded to the Processor 110 shown in Figure 1 of the reference.

3 MR. KESSLER: Yes.

4 JUDGE COURTENAY: And the second reading of the claim on the  
5 reference by the Examiner is arguably that the processing slice in your claim  
6 corresponds to the entirety of Figure 1 of the reference --

7 MR. KESSLER: Yeah.

8 JUDGE COURTENAY: -- which is -- that's the four corners of the  
9 invention in the reference. That's everything, isn't it?

10 MR. KESSLER: Yes.

11 JUDGE COURTENAY: Okay.

12 MR. KESSLER: And it's not clear, it hasn't been clear to us  
13 throughout.

14 JUDGE COURTENAY: You did address both of those --

15 MR. KESSLER: We did.

16 JUDGE COURTENAY: -- constructions, or those readings of the  
17 claim --

18 MR. KESSLER: We did.

19 JUDGE COURTENAY: -- of the reference in your brief.

20 MR. KESSLER: Yes, we did.

21 JUDGE COURTENAY: Okay.

22 MR. KESSLER: Because we weren't sure, and we're still not sure  
23 because the Examiner really hasn't clarified what he was talking about.  
24 Because he's been focusing on this wait state. In his reply and his  
25 supplemental reply, he was focusing on the wait state.

1 JUDGE COURTENAY: Okay, assuming in the first instance -- let's  
2 just dispose of this. Say the Examiner is reading the processing slice on the  
3 Processor 110.

4 MR. KESSLER: Yes.

5 JUDGE COURTENAY: Okay. What flaws do you find in that  
6 reading? I believe you've asserted in your brief that the Processor 110 is  
7 only capable of sequential single-threaded operation, is that correct?

8 MR. KESSLER: I'm sorry?

9 JUDGE COURTENAY: I believe in your brief you've asserted that  
10 the Processor 110 in the reference is only capable of processing threads  
11 sequentially, one at a time.

12 MR. KESSLER: Yes. And in fact, let me -- I did mark that. It's at --  
13 if you look at column 8, lines 40 -- the paragraph at lines 40 through 51, it  
14 talks about the thread enters a waiting state. And then if you look at column  
15 9, lines about 19 through 23, at the time a fork has occurred, execution of the  
16 thread is interrupted and execution of the thread in the fork destination is  
17 started. So by repeating the operation, the sequential execution path is  
18 obtained.

19 JUDGE COURTENAY: Okay. We have the term sequential  
20 execution path that's repeated numerous times in column 9.

21 MR. KESSLER: Yeah.

22 JUDGE COURTENAY: And the first two lines of column 9, it  
23 discloses, in the shown embodiment, "at first, with respect to the multi-  
24 threaded single program, one sequential execution path is defined." So your  
25 argument, again, am I properly characterizing your argument that the  
26 Processor 110 is only capable of single-threaded operation? Is that correct?

1 MR. KESSLER: That's the way I read it.

2 JUDGE COURTENAY: Okay. Let's move -- if we could, could we  
3 move on to the second possible reading of the claim on the reference by the  
4 Examiner?

5 MR. KESSLER: Sure.

6 JUDGE COURTENAY: Can you address that?

7 MR. KESSLER: Oh, well, the second reading would be that the  
8 processing slice is the entire, the entirety of Figure 1.

9 JUDGE COURTENAY: Okay. And what problem do you see with  
10 that reading?

11 MR. KESSLER: There are no functional units.

12 JUDGE COURTENAY: Okay. Anything else?

13 MR. KESSLER: Well, that's the main thing we looked at.

14 JUDGE COURTENAY: And can you expand on that?

15 MR. KESSLER: Well, in other words, where we claim that we can  
16 process -- we can execute instruction for more than plurality of threads  
17 concurrently in a single -- in a clock cycle -- well, it says, the processing  
18 slice includes a -- where do we say -- comprises a functional unit to perform  
19 register operation specified in the instructions dispatched from each of the  
20 plurality of threads. And we don't find that.

21 JUDGE COURTENAY: Okay. What is a broad but reasonable  
22 construction of the term "functional unit," in your appraisal?

23 MR. KESSLER: Well, the way we -- I think the way we have it, if  
24 you look at Figure 4, it's any of these units that are to the right of the  
25 instruction decoder and dispatcher. So it would be the -- in fact, we even say



1 functional unit, peripheral unit interface, register file, memory access unit.  
2 Those are all functioning units, and they're part of the processing slice.

3 JUDGE COURTENAY: Okay. You're saying none of those elements  
4 are present in Figure 1 of the reference, even inherently present?

5 MR. KESSLER: We don't see it.

6 JUDGE COURTENAY: Anything else regarding your claim 1, for  
7 example, that you found?

8 MR. KESSLER: Well, the -- well, as I said, the execution of  
9 instructions for more than one of the threads concurrently in a clock cycle, in  
10 a single clock cycle, and it's just not in there. It's just not in Motomura, as  
11 we read it.

12 JUDGE COURTENAY: I did a text search of the reference and I  
13 could not find the terms "clock" or "cycle" in the entirety of the reference.  
14 And I'm looking at the figures. I don't see a clock, although I think most  
15 people would agree that a clock is inherent in any computer or processor  
16 system. You have to have a clock to drive the processor.

17 MR. KESSLER: I agree. But the whole idea of our invention is that  
18 you perform multiple operations in one clock cycle, and that's not what --  
19 there's nothing in Motomura that even suggests that. Because typically, you  
20 would perform it -- perform operations in different clock cycles.

21 JUDGE COURTENAY: So is it your position that we're required to  
22 speculate regarding the teachings of the reference as to whether it teaches  
23 executing the instructions from more than one of the plurality threads  
24 concurrently in the clock cycle?

25 MR. KESSLER: I would say so, yes.

1 JUDGE COURTENAY: Okay. Any other limitations in claim 1 you  
2 would like to address?

3 MR. KESSLER: No, I think that really covers it. And the remaining  
4 claims all rise and fall with claim 1, because they all have the same or  
5 similar features or limitations.

6 JUDGE COURTENAY: Okay, we do have a 103 rejection on claim  
7 40. Would you like to address that?

8 MR. KESSLER: We do. Let me see that one. Well, again, it's based  
9 on Motomura. So if Motomura falls, then the 103 falls, as well, because I  
10 think the Dove patent, as far as I recall -- and I must admit, I didn't study it  
11 very hard for this hearing -- just does not teach that missing feature of  
12 Motomura. So as I said, all the claims rise and fall with Motomura.

13 JUDGE THOMAS: I have a question about this peripheral BUS  
14 feature, like independent claim 1, for example.

15 JUDGE COURTENAY: That's also in claim 40, as well.

16 JUDGE THOMAS: All right. So how do you -- do you have any  
17 position with respect to that limitation you want to share with us now?

18 MR. KESSLER: With respect to the peripheral BUS?

19 JUDGE THOMAS: That limitation of the independent claims. It's  
20 the first, I think the first limitation.

21 MR. KESSLER: Yeah. Nothing specifically. Was there anything  
22 you were looking for?

23 JUDGE COURTENAY: You stated earlier that in the second reading  
24 of the claim on the reference --

25 MR. KESSLER: Yes.

1 JUDGE COURTENAY: -- the second alternative, that the Examiner  
2 is reading your claimed processing slice --

3 MR. KESSLER: Yes.

4 JUDGE COURTENAY: -- a broad but reasonable construction on the  
5 entirety of the reference on Figure 1?

6 MR. KESSLER: Yes, that's true. And in that respect, there is no  
7 peripheral BUS. If you look at the entirety of Figure 1, then there is no  
8 peripheral BUS. There are no peripheral elements. There are no functional  
9 units, there are no peripheral units.

10 JUDGE COURTENAY: Okay, in the body of the rejection, on page 4  
11 of the [final rejection], the Examiner asserts that "[t]he requester/generator  
12 for the threaded operations is the peripheral device, and the means to convey  
13 the request is the peripheral bus." How do you respond to that?

14 MR. KESSLER: I'm sorry, where is that?

15 JUDGE COURTENAY: I'm looking at page 4 [final rejection], the  
16 rejection of claim 1, and as duplicated in the answer.

17 MR. KESSLER: Let me find that.

18 JUDGE COURTENAY: To focus my question more clearly, do you  
19 see that the Examiner is making an inherency argument, that this is an  
20 inherent teaching in the reference?

21 MR. KESSLER: Let me just -- he must be, because, again, if you  
22 look at the entirety of Figure 1 as the processing slice, where is the  
23 peripheral BUS?

24 JUDGE COURTENAY: Okay. Assuming arguendo that the  
25 Examiner is making an argument for inherency, how do you respond to that?  
26 The Examiner seems to be broadly asserting that we have a computer system

1 here, a multi-threaded computer system, and therefore we must have a  
2 peripheral that connects to it to request the operations. How do you respond  
3 to that?

4 MR. KESSLER: Well, I agree that, yes, in most -- in just about any  
5 computer system, there are going to be peripheral buses, because what else  
6 would a computer system have except operations that perform --

7 JUDGE COURTENAY: So, would you agree or disagree that a  
8 peripheral BUS and peripheral are necessarily part of this disclosure, the  
9 reference, the Motomura reference?

10 MR. KESSLER: I don't -- well --

11 JUDGE COURTENAY: You need to agree or disagree.

12 MR. KESSLER: I will agree to the extent that any computer system  
13 is going to have a peripheral BUS to be useful, okay? I will agree to that.  
14 But --

15 JUDGE COURTENAY: Well, the reference discloses "any computer  
16 system."

17 MR. KESSLER: Pardon?

18 JUDGE COURTENAY: It discloses a computer system.

19 MR. KESSLER: Yes, it does.

20 JUDGE COURTENAY: Any type of multi-threaded computer  
21 system.

22 MR. KESSLER: Yes.

23 JUDGE COURTENAY: Are you conceding that the reference  
24 inherently has a peripheral and a peripheral BUS?

25 MR. KESSLER: I will say that, yes, it would probably -- you would  
26 need a peripheral BUS in order to have an operative system.

1 JUDGE COURTENAY: So you are conceding that point?

2 MR. KESSLER: It doesn't disclose it, but, yes, you would need one.

3 JUDGE COURTENAY: So inherently, you agree that the reference  
4 necessarily has a peripheral BUS and a peripheral to meet the limitation of  
5 your claim? You agree or disagree? The Examiner appears to be making an  
6 inherency argument.

7 MR. KESSLER: Right. Right. I agree with that. And --

8 JUDGE COURTENAY: But at the same time, the Examiner is  
9 reading the processing slice on the entirety of Figure 1 of the reference.

10 MR. KESSLER: Yeah. And yes, there would be a peripheral BUS  
11 that would hang off of that entirety of the reference.

12 JUDGE COURTENAY: So you're not contesting that limitation with  
13 your claim?

14 MR. KESSLER: Not really.

15 JUDGE COURTENAY: Okay.

16 MR. KESSLER: I'm not going to strongly contest it, no.

17 JUDGE COURTENAY: Okay. Any other questions?

18 JUDGE THOMAS: I guess the argument that's common to both the  
19 issues in your case, both positions, let's say, as to whether the entirety of  
20 Figure 1's Element 100 is the slice or whether what appears to be an  
21 alternative view, that the Processor 110 of Figure 1 is a slice. You say  
22 there's ambiguities in the record, disclosure of that patent, that it's hard to  
23 determine what a cycle, a clock cycle is and whether a plurality of  
24 operations occurred within one clock cycle.

25 MR. KESSLER: Yeah, I really don't care which way you read the  
26 processing slice, whether you take it as the entirety of Figure 1 or you take it

1 as Processor 110, you still don't have that feature of multiple operations in a  
2 single clock cycle. That's nowhere in Motomura, and that's the key feature.

3 JUDGE COURTENAY: So it's your contention we don't have  
4 anticipation with respect to the claims that stand rejected under 102 because  
5 we don't have a specific teaching or disclosure in the reference?

6 MR. KESSLER: Or suggestion.

7 JUDGE COURTENAY: Of this clock cycle that you claim is --

8 MR. KESSLER: Yes.

9 JUDGE COURTENAY: -- instructions for more than one of the  
10 plurality threads being executed concurrently in a clock cycle?

11 MR. KESSLER: That's correct.

12 JUDGE COURTENAY: Your contention is we're left to speculate  
13 from this disclosure of the reference?

14 MR. KESSLER: Yes, that's what we would say.

15 JUDGE COURTENAY: So based upon that alone, your contention is  
16 there's no anticipation of your claims that stand rejected under 102?

17 MR. KESSLER: That's correct. That is a key feature of this  
18 invention.

19 JUDGE COURTENAY: And the 103 rejection --

20 MR. KESSLER: I don't want to say the key feature, but a key feature.

21 JUDGE COURTENAY: Your contention is the 103 rejection of  
22 claim 40 fails for the same reason?

23 MR. KESSLER: Yes, because it doesn't have the missing part.

24 JUDGE COURTENAY: Okay. Now, you have argued the peripheral  
25 BUS in your brief. Are you waiving that argument? You appear to have  
26 waived it just a moment ago. Just to be clear for the record.

1 MR. KESSLER: We will not strongly argue it here.

2 JUDGE COURTENAY: Are you waiving it or not?

3 MR. KESSLER: Pardon?

4 JUDGE COURTENAY: Are you waiving that argument regarding  
5 that limitation?

6 MR. KESSLER: I'm not going to waive it, I'm going to rely on what's  
7 in the brief.

8 JUDGE COURTENAY: Okay. But you have admitted here on  
9 record that --

10 MR. KESSLER: Yes.

11 JUDGE COURTENAY: -- that the reference inherently teaches that  
12 feature, have you not, just a moment ago? We have a transcript here.

13 MR. KESSLER: I know you do. No, I won't concede that it teaches  
14 it. I will concede that in order to have an operative system, you would need  
15 a peripheral BUS.

16 JUDGE COURTENAY: Okay.

17 MR. KESSLER: Okay? Is that a fair statement?

18 JUDGE COURTENAY: Okay. Any other points you'd like to make  
19 regarding this claim?

20 MR. KESSLER: No, I think that will -- that pretty much sums it up.

21 JUDGE COURTENAY: Any other questions?

22 JUDGE THOMAS: I don't think we have any other questions. Thank  
23 you very much.

24 MR. KESSLER: Thank you very much.

25 JUDGE COURTENAY: Thank you very much.

26 REPORTER: Excuse me, sir, before you go?

1 MR. KESSLER: Yes?

2 REPORTER: I just need to get your name -- please -- okay, that will  
3 work perfectly. And do you know the spelling of the Motomura --

4 MR. KESSLER: Pardon?

5 REPORTER: Motomura?

6 MR. KESSLER: Motomura?

7 REPORTER: Yes.

8 MR. KESSLER: M-o-t-o-m-u-r-a.

9 REPORTER: All right. Thank you very much.

10 MR. KESSLER: Okay? Anything else?

11 REPORTER: That will be all. Thank you.

12 MR. KESSLER: Thank you for your time.

13 JUDGE COURTENAY: Thank you.

14 (Whereupon, the hearing concluded on July 9, 2008, at  
15 9:24 a.m.).